APPENDIX 5

COMMONWEALTH of VIRGINIA

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Secretary of Natural Resources

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MEMORANDUM

TO: State Water Control Board Members
FROM: Ellen Gilinsky, Ph.D., Director, Water Quality Programs
DATE: September 12, 2005
SUBJECT: Point Source Nutrient Control Regulations for Dischargers in the Chesapeake Bay Watershed

EXECUTIVE SUMMARY

Staff intends to ask the Board to adopt amendments to two point source discharge control regulations:

(1) Regulation for Nutrient Enriched Waters and Dischargers Within the Chesapeake Bay Watershed (9 VAC 25-40), and
(2) Water Quality Management Planning Regulation (9 VAC 25-720)

These actions follow the Board's decision, at their June 28, 2005 meeting, to adopt the amended regulations and suspend the effective date to allow for another 30-day public comment period. The comment period ran from July 25 to August 24, 2005, and a public meeting was held on August 11, 2005. Based on comments received and staff review of the regulations, further amendments have been developed and will be presented to the Board for consideration. However, recommendations under 9 VAC 25-720 will not include nutrient load allocations for facilities in the York and James River basins until a subsequent meeting of the Board.

A sizable number of comments were received from sixty-nine respondents, including local governments, public wastewater treatment authorities, industrial facilities, stakeholder organizations, citizen groups, individuals, and a federal agency. Some of the major categories that the comments can be grouped into include:

- Significant Dischargers requesting increased nutrient waste load allocations.
- Assigning waste load allocations for Non-Significant Dischargers; provide incentives for regionalization or other trading considerations for smaller dischargers.
- Allowance for "net" loads and "bioavailability" of nutrients discharged by publicly owned treatment works.

- Opposition to adopting James and York waste load allocations until after approval of final water quality standards for these basins; consider less stringent requirements that can achieve same environmental objectives.

SUBSTANCE OF AMENDMENTS AND REVISIONS

1. **Regulation for Nutrient Enriched Waters and Dischargers within the Chesapeake Bay Watershed; 9 VAC 25-40**: The main revisions made to the June 28, 2005 amended regulation are as follows:
    a. Deleted first paragraph under 9 VAC 25-40-70 since it is only a descriptive paragraph and does not add any requirements.
    b. Added a provision under 9 VAC 25-40-70.A.4 that less stringent technology-based standards and associated concentration limitations may be established for dischargers where such standards and concentrations for the nutrient technology installed would degrade receiving waters, such as a reservoir used as a public water supply.

2 **Water Quality Management Plan Regulation; 9 VAC 25-720**: The main revisions made to the June 28, 2005 amended regulation are as follows:
    a. Revised the definition for "Significant Discharger" to clarify that dischargers "downstream" of the fall line are covered. Prior wording referred to "east" of the fall line which would not include the Bay dischargers on the Eastern Shore which are west of its fall line.
    b. Deleted the definition for "trading" since the term "exchanged" is used in 9 VAC 25-720-40 of the regulation to match the terminology used in the Code of Virginia.
    c. Clarified under 9 VAC 25-720-40.B. and C. that when limiting a discharger to that portion of its allocation that is either bioavailable or is the net nutrient load portion, such limits must set consistent with the assumptions and methods used to derive allocations through the Chesapeake Bay watershed and water quality models.
    d. Added a new Section D to 9 VAC 25-720-40 to clarify that the Board may adjust individual allocations through amendment to the regulation. Reasons for an adjustment include, but are not limited to:
        - Whether or not a discharger completes a plant expansion as evidenced by issuance of a Certificate to Operate by December 31, 2010. Some dischargers may successfully expand their treatment facilities even though they were not able to provide reasonable assurance at this time that their expanded facility would be operating by 2010. Other dischargers may not be successful in having the expanded facility in operation by 2010.
        - To ensure the river basin nutrient load allocations are achieved. The river basin allocations represent attainment of water quality standards. Future adjustments to the point source allocations may be necessary to achieve water quality standards.

Any adjusted individual waste load allocation must maintain water quality standards.

e. Clarified in the waste load allocation tables that the total allocations in the tables relate to the listed facilities and not the total allocations (point source plus nonpoint source inputs) for each basin.

PUBLIC COMMENT ISSUES

Many detailed comments were received from 69 respondents. Among these were requests for revised nutrient waste load allocations for 42 significant dischargers (14 located in the Shenandoah-Potomac, 7 in the Rappahannock, and 1 in the Eastern Shore basins; 6 in the York, and 14 in the James basins). Several wrote letters of support for the waste load allocation increase requests, while others provided general comments on the content and provisions of the amended point source nutrient discharge control regulations. General comments and responses are summarized below.

A. Regulation for Nutrient Enriched Waters and Dischargers within the Chesapeake Bay Watershed (9 VAC 25-40)

1. **Comment:** Revise regulation to exempt a technology-based standard and associated concentration limits in those cases where such limits would not be protective of receiving water quality. (Upper Occoquan Sewage Authority)
Response: *Studies have shown that the discharge of nitrate-nitrogen to the Occoquan Reservoir from the Upper Occoquan Sewage Authority regional treatment plant helps water quality by suppressing the release of phosphorus bound to the bottom sediments in the reservoir. Such a release of phosphorus would contribute to excessive algae blooms in the reservoir, impacting its use as a drinking water sources. Staff agrees with this assessment and has included wording under 9 VAC 25-40-70.A.4. that allows the application of less stringent technology-based standards and associated concentration limits in order to protect receiving water quality.*

2. **Comment:** Regulation should not include technology based concentration limits; also, DEQ should provide guidance to facilitate NPS offsets. (Coors)
Response: *as part of the overall watershed approach, nutrients need to be reduced wherever possible from all sources amenable to treatment. Efficient operation of treatment plants is a reliable, cost-effective and equitable means of reducing nutrients. If plants are discharging below their design flow and treating for nutrient reduction at the efficiency of the system installed, the reduced nutrient load it will also provide credits available to other communities and industrial plants. Guidance to facilitate nonpoint source offsets will be provided through the Watershed General Permit program (another rulemaking underway under authorization of the Nutrient Credit Exchange Program legislation).*

3. **Comment:** Retain technology-based numerical limits as a "backstop", regardless of alternative compliance methods established for facilities certified under Environmental Excellence Program. (Chesapeake Bay Foundation, R. W. Ehrhart)
Response: *Concentration limits, based on the technology installed, will still appear in the facility's discharge permit, with a provision that they do not apply so long as the plant is*

certified under the Environmental Excellence Program at the "E3" or "E4" level. Permit limits would apply immediately upon decertification.

B. Water Quality Management Planning Regulation (9 VAC 25-720)

1. **Comment:** Several dischargers in the Shenandoah-Potomac, Rappahannock, and Eastern Shore Basins have requested additional nutrient load allocations due to claims they will have expanded treatment facilities in operation by 2010.
Response: *Establishing nutrient load allocations has been based, in part, on the design capacity of the wastewater treatment facility that is certified to operate by 2010. Owners of 17 treatment facilities have requested additional nutrient load allocations due to claims their facilities will be expanded by that date. After staff review of the information submitted by these owners, 12 of these requests were judged to have provided reasonable assurance that their treatment facility would be certified to operate at the expanded flow by 2010. In these cases, the higher allocation was included in the regulation, although some of these also included a footnote in the river basin table that stated the allocation would revert to the amount based on their existing design flow if the expanded facilities were not on-line by 2010.*

While the proposed regulation does not include a higher allocation for the remaining owners staff believes some assurance should be provided that an increase in allocation will be considered in the future should their facility be expanded and operational by 2010. A new section, 9 VAC 25-720-40.D., has been added to recognize that the Board may amend the regulation in the future to adjust individual nutrient load allocations for a number of reasons, including completion of a plant expansion as evidenced by issuance of a Certificate to Operate by December 31, 2010. The section also states that any adjustments to allocations must ensure water quality standards are maintained.

Based on staff review of requested waste load allocation increases, figures in the Water Quality Management Planning Regulation either remain unchanged or have been revised as appropriate to increase or decrease waste load allocations (WLA), as follows for facilities in the Shenandoah-Potomac, Rappahannock, and Eastern Shore Basins:

Shenandoah-Potomac

- *Augusta Co. S.A.: Weyers Cave STP - WLAs currently based on 0.5 MGD, request increase based on 3.0 MGD. ACSA claims plant needs major expansion to serve potential industrial development. WLAs remain unchanged, as project is still in very early planning stages and increase is requested to enhance recruitment efforts, rather than serve anticipated and expected customers in the development.*
- *Dale Service Corporation: DSC #1 and #8 STPs – WLAs currently based 4.0 MGD design flow for each plant; request increase based on 4.6 MGD for each. DSC provided details on planned increase in number of residences in service area from 2005-2010, which this public service company is obligated to accommodate. Also provided description of existing plant that includes 70% of the infrastructure needed for increased flows, financing plan, and milestone schedule. WLAs have been revised based on 4.6 MGD at each plant, but Certificate to Operate (CTO) for expansion must be secured by December 2010, or WLAs will decrease based on a design flow of 4.0 MGD for each plant.*

- *Fauquier Co. W&SA: Vint Hill STP – WLAs currently based on 0.6 MGD and total nitrogen (TN) of 3.0 mg/l; request increase based on 0.95 MGD, and TN concentration of 8.0 mg/l. Owner provided information about current upgrade/expansion activities in two phases, both to be complete by 2010. WLAs have been revised based on 0.95 MGD, but CTO for expansion must be secured by December 2010, or WLAs will decrease based on a design flow of 0.6 MGD. Basis for TN concentration used to calculate WLAs remains unchanged. Owner justified request based on information supplied by Upper Occoquan S.A. regarding impacts from nitrate discharges to Occoquon reservoir. While TN from UOSA has been demonstrated through monitoring and modeling to reach the reservoir in the form of NO3, which aids in protecting water quality, no such modeling exists for the discharge from Vint Hill. This factor lead to the decision when the permit was last reissued to treat the 0.95 MGD discharge as having no impact, positive or negative, on the reservoir when setting limits for all effluent parameters.*
- *Frederick-Winchester S.A.: Opequon STP - Basis for WLAs remains unchanged. Wet weather tier accommodates excessive infiltration and inflow, which is not a design flow for seasonal capacity needs achieving full treatment. Although receiving stream conditions have assimilative capacity to accept higher wet weather effluent discharge without violating water quality standards locally, there are downstream impacts on tidal water quality and impairments due to excessive annual loads of nutrients from all sources.*
- *Frederick-Winchester S.A.: Parkins Mill STP - WLAs currently based 3.0 MGD; request increase based on 5.0 MGD. The discharge permit is currently undergoing modification to include a 5.0 MGD flow tier, and owner has begun the process to upgrade/expand plant (Preliminary Engineering Report being drafted), with construction scheduled for completion in 2009. WLAs have been revised based on 5.0 MGD, but CTO for expansion must be secured by December 2010, or WLAs will decrease based on a design flow of 3.0 MGD.*
- *Harrisonburg-Rockingham Regional S.A.: North River STP – WLAs currently based 16 MGD; request increase based on 20.8 MGD. HRRSA has applied for permit reissuance (April 2006) with a design flow basis of 20.8 MGD. Engineering for the increased capacity began May 2005 and is scheduled for completion January 2007; project schedule shows completion of construction and issuance of the CTO by December 2009. WLAs have been revised based on 20.8 MGD, but CTO for expansion must be secured by December 2010, or WLAs will decrease based on a design flow of 16.0 MGD.*
- *Loudoun County S.A.: Broad Run STP – WLAs currently based 10 MGD; request increase based on 11 MGD. Request does not depend on additional construction beyond current project, but seeks a re-rating of system installed. LCSA's design engineer has stated that the plant's 11 MGD design criteria, identified as Maximum 30-day Flow in the March 2003 Design Development Report, is a continuous hydraulic and treatment design flow capacity that can reliably achieve the target performance in accordance with Virginia's Sewerage regulations. LCSA plans to seek a revised Certificate to Construct and subsequent CTO based on this design criteria. WLAs have been revised based on 11 MGD, but CTO for plant re-rating must be secured by December 2010, or WLAs will decrease based on a design flow of 10 MGD.*
- *Merck - WLAs currently based on 10.09 MGD (outfall 001, final surface water discharge), TN = 3.13 mg/l, and TP = 0.5 mg/l. Merck's discharge permit being reissued to include nutrient monitoring at internal Outfall 101, which accounts for just treated process wastewater stream (excludes cooling water). WLAs revised based on 1.2 MGD, TN = 4.0 mg/l, and TP = 0.3 mg/l.*

- *Town of Mount Jackson STP – WLAs currently based 0.6 MGD; request increase based on 0.7 MGD. Plant recently received a new permit for the 0.6 MGD expansion tier, and submitted a request for modification to 0.7 MGD on 8/24/05, to serve an industrial customer that was not anticipated in the approved PER, which is being updated to account for the additional flow. Plant scheduled to be in service within 3 years. WLAs have been revised based on 0.7 MGD, but CTO for increased design flow must be secured by December 2010, or WLAs will decrease based on a design flow of 0.6 MGD.*
- *Town of New Market STP – WLAs currently based 0.5 MGD; request increase based on 1.0 MGD. Basis for WLAs remains unchanged. No expectation of CTO for expanded design flow by 2010, based on information provided.*
- *Town of Purcellville: Basham Simms STP – WLAs currently based 1.0 MGD; request increase based on 1.5 MGD. Town accepted proposed WLAs for 1.0 MGD plant in 7/04 permit reissuance, which included compliance schedule for nutrient control system installation by 7/1/09. Recent study indicates flows are increasing rapidly due to unprecedented growth in service area and base flows generally higher than those used in basis of design (likely due to inaccuracies in flow measuring equipment previously used at the plant that has been replaced in new facility). Engineer has begun planning/design for proposed upgrade and expansion, and Town submitted permit modification request 8/26/05 for a 1.5 MGD flow tier. WLAs have been revised based on 1.5 MGD, but CTO for increased design flow must be secured by December 2010, or WLAs will decrease based on a design flow of 1.0 MGD.*
- *Shenandoah Co.: Stoney Creek STP – WLAs currently based 0.6 MGD; request increase based on 1.2 MGD. Basis for WLAs remains unchanged. No expectation of CTO for expanded design flow by 2010, based on information provided.*
- *Stafford Co.: Aquia STP – WLAs currently based 8.0 MGD; request increase based on 12.0 MGD. Basis for WLAs remains unchanged. No expectation of CTO for expanded design flow by 2010, based on information provided.*

Rappahannock

- *Culpeper County: Mountain Run STP – WLAs currently based 1.5 MGD; request increase based on 2.5 MGD. Permit reissued on 6/21/05 which included a design flow tier of 1.5 MGD. County will submit an application to increase the permitted capacity to 2.5 MGD, to serve a large commercial and mixed use development that is projected to produce approximately 0.75 MGD. Mountain Run plant will also incorporate two currently permitted plants (Airpark plant and Elkwood plant), with plans for 2.5 MGD capacity to be on-line by 2010. WLAs have been revised based on 2.5 MGD, but CTO for increased design flow must be secured by December 2010, or WLAs will decrease based on a design flow of 1.5 MGD.*
- *Culpeper County: South Wales STP – WLAs currently based 0.6 MGD; request increase based on 0.9 MGD. County expects to have 0.9 MGD facility constructed by Jan. 2008; PER and permit document the higher design flow. WLAs have been revised based on 0.9 MGD, but CTO for increased design flow must be secured by December 2010, or WLAs will decrease based on a design flow of 0.6 MGD.*
- *Town of Culpeper STP – WLAs currently based 4.5 MGD; request increase based on 6.0 MGD. Basis for WLAs remains unchanged. No expectation of CTO for expanded design flow by 2010, based on information provided. Town of Culpeper's request for increased capacity included an expectation to accommodate flows from surrounding portions of Culpeper County. As noted in response to comments from Culpeper County (above), the County has documented their*

intention to provide service to these areas, thus removing the need for this capacity in the Town's plant.

- *Fauquier Co. W&SA: Remington STP – WLAs currently based 2.0 MGD; request increase based on 2.5 MGD. Plant has approximately 90% of the infrastructure already installed to operate at the permitted 2.5 MGD tier; only minor appurtenances and improvements necessary to allow plant to operate at the 2.5 MGD tier (additional blowers to increase aeration capacity and additional ultraviolet disinfection units). WLAs have been revised based on 2.5 MGD, but CTO for increased design flow must be secured by December 2010, or WLAs will decrease based on a design flow of 2.0 MGD.*
- *Fauquier Co. W&SA: Marsh Run STP – requested WLAs for a proposed facility to replace failing septic tanks in the communities of Catlett and Calverton. Facility appears unlikely to be built by 2010, as no planning, design, or construction actions have been taken to-date, therefore no WLAs assigned and new discharge will be addressed, if it occurs, under the provisions of the Nutrient Credit Exchange Program legislation. County will have the option of distributing the WLAs from the other facility it owns and operates in the Rappahannock basin (Remington STP) between these two plants. County's comment that the Board should develop a policy for taking septic systems off-line into a treatment facility, with an allowance for load allocations, will be dealt with under the Watershed General Permit program (authorized by the 2005 Nutrient Credit Exchange Program statute).*
- *Haymount Ltd. Partnership: Haymount STP – WLAs currently based 0.58 MGD; request increase based on 0.96 MGD. Certificate to Construct for the 0.58 MGD plant is about to be issued, with many of the treatment units to be installed with capacity for 0.96 MGD. Schedule for completing increased sizing for remaining units to bring full plant design flow to 0.96 MGD anticipates issuance of CTO in summer 2008. WLAs have been revised based on 0.96 MGD, but CTO for increased design flow must be secured by December 2010, or WLAs will decrease based on a design flow of 0.58 MGD.*
- *Omega Protein – WLAs currently based on long-term average production flow figure of 3.21 MGD (outfall 001 = 3.0 MGD + outfall 002 = 0.21 MGD). Owner claimed design flow of 4.0 MGD for outfall 001 and 0.4 MGD for outfall 002; these are daily peak flow maximums, which is an unlikely operating status to be sustained under normal production conditions over the course of an entire year. Omega's comment letter admitted that this peak level was reached only 50-60% of the time under representative data from 2004. The main factor in deciding the production flow figure is the amount of fish processed over a year. On 8/17/05, the Atlantic Marine States Fisheries Commission (AMSFC) approved Addendum II to the Menhaden Fisheries Management Plan, which established a 5-year annual cap, beginning in 2006, on reduction fishery landings in Chesapeake Bay based on the mean landings over the last 5 years. The production-based long-term average flow figure of 3.21 MGD is considered appropriate and equitable under the restrictions approved by the AMSFC, in addition to another key factor of production used to calculate Omega's WLAs, the number of days of operation, which has been assumed at the theoretical maximum of 198 days/year.*

Eastern Shore

- *Town of Onancock STP – WLAs currently based 0.25 MGD; request increase based on 0.75 MGD. Onancock's plant has been discharging near its current permitted capacity for the last 4 years (annual average flows in 2003 and 2004 were 0.25 MGD), and recent Basis of Design Report for nutrient reduction has concluded that additional capacity must be constructed by*

2010. The Town intends to submit a permit application for the higher flow tier, and anticipates expanded facility to be constructed and certified for operation by 2010. WLAs have been revised based on 0.75 MGD, but CTO for increased design flow must be secured by December 2010, or WLAs will decrease based on a design flow of 0.25 MGD.

Requests for increased waste load allocations from dischargers in the York and James basins have been deferred at this time, and will be addressed when final recommendations for the special water quality standards proposed for those waters (site-specific dissolved oxygen in the Pamunkey and Mattaponi; numeric chlorophyll criteria in the James) are presented to the Board for consideration at a future date.

2. **Comment**: Regulation should state that non-significant dischargers have waste load allocations based on current permitted capacity and total nitrogen and total phosphorus concentrations reflecting no additional treatment; provide explicit allocations for non-significant plants; allow owners of multiple facilities to "bubble" the allocations and manage them collectively, including non-significant dischargers. (Rapidan S.A., Spotsylvania Co., Virginia Association of Municipal Wastewater Agencies)
Response: *Only those significant dischargers included in the WQMP regulation have assigned waste load allocations; the non-significant dischargers do not. Therefore, any "bubbling" of loads by an owner of multiple treatment plants only applies to those plants that are significant dischargers with assigned waste load allocations. The Code of Virginia, at §62.1-44.19:14 and 15, describes the responsibilities for the non-significant dischargers to offset any nutrient loads discharged over their permitted design capacity as of July 1, 2005. While the significant dischargers at their design capacity need to reduce their nutrient loads, the non-significant dischargers are responsible to offset any increase in their nutrient load resulting from expansion above their current design capacity.*

3. **Comment**: Policy needed to allow all or some of the existing nutrient load from non-significant dischargers to be utilized when another plant takes them off-line; develop an equitable plan to support and promote regionalization of smaller, less efficient treatment plants into larger facilities with better treatment capability; concerned that regulation only targets major dischargers. (Fauquier Co W & SA, Augusta Co. S.A., Steven Herzog, Spotsylvania Co.)
Response: *The WQMP regulation only deals with allocations for Significant Dischargers. Non-Significant Dischargers are dealt with through the rulemaking now underway for the Watershed General Permit (WGP; authorized by the 2005 Nutrient Credit Exchange Program statute). The agency will consider means through the WGP process to not discourage regionalization, but also to recognize the need to maintain loading caps.*

4. **Comment:** Clarify that any adjustments that limit the allocations to either the bioavailable portion of the nitrogen or the net nutrient load are done consistent with the assumptions and methods used to derive allocations through the Chesapeake Bay models. (EPA)
Response: *Staff recognizes that the nutrient load allocations assigned to the point source dischargers, along with the allocations assigned to all of the other sources of nutrients within each of the river basins, must in combination achieve and maintain the water quality standards in the Chesapeake Bay and in the tidal tributary rivers. Staff agrees with this comment and has*

each of the river basins, must in combination achieve and maintain the water quality standards in the Chesapeake Bay and in the tidal tributary rivers. Staff agrees with this comment and has included wording under 9 VAC 25-720-40.B. and C. so that any adjusted limits are consistent with the approach used with the Chesapeake Bay models.

5. **Comment**: Technology-based waste load allocations, being more stringent than Federal requirements, are beyond the Board's authority and procedurally flawed for failure to notify the General Assembly. (Hanover County, Virginia Association of Municipal Wastewater Agencies)
***Response**: DEQ staff have relied on a opinion from the Attorney General (July 9, 1984) that provides, in part:*

- *The Authority of the Board, set out under statute in the Virginia Code, is restricted by the Federal Water Pollution Control Act (the "Act"), which prohibits the State from adopting certain requirements on the discharge of pollutants that are less stringent than Federal requirements. The Act preserves the rights of the State to impose requirements that are more stringent.*
- *The provisions of the Act...could include treatment requirements for nutrients arising from...(2) any more stringent limitations necessary to implement applicable water quality standards established pursuant to the Act. (emphasis added)*
- *Regarding category (2) above,...if the administrator of EPA determines that a State's standards satisfy the requirements of the Act, those standards become the water quality standards for the applicable waters of the State. ...I am of the opinion that water quality standards approved in this manner are required by the applicable provisions of the Act, and are enforceable by the Board. (emphasis added)*

Therefore, achieving and maintaining compliance with the recently adopted tidal water quality standards for the Bay and its tributaries can result in treatment requirements for political subdivisions that are more stringent than Federal treatment requirements, and are enforceable.

The General Assembly was notified about the potential for these regulations to be more stringent than requirements of the Federal Clean Water Act, by memorandum dated February 18, 2005. This notification was not specific to a particular level of stringency, and would cover any treatment level necessary to support compliance with water quality standards.

6. **Comment**: Regulations treat all nutrients entering the Bay the same although modeling shows that the York and James have little impact on Bay; regulations may encourage growth on septic systems whereas new flows should be on state-of-the-art plants; regulations not consistent with trading law since they treat all pounds the same in the tributaries but the law does not allow trading between basins. (Steven Herzog)
***Response**: The Water Quality Management Planning Regulation allocates loads based on a watershed approach that does recognize the different impacts nutrients discharged within each river basin have on the Bay and on the water quality within each of the tributaries themselves. While staff does not believe the proposed regulations will encourage growth served by septic systems, it is a potential problem that will need to be monitored closely and further regulatory or legislative actions may be needed if it becomes a problem. The regulations have been amended to be consistent with the 2005 Chesapeake Bay Watershed Nutrient Credit Exchange Program legislation.*

7. **Comment**: Treatment plants must start reducing pollution, but they [limits] must be scientifically attainable; insist they meet state of the art and are constantly upgraded. (Sherilynn Hummel)
Response: *Staff agrees that wastewater treatment plants have a critical role in reducing the overall nutrient loading to the Bay and tidal rivers. The allocations are set at levels that require the use proven nutrient reduction technologies.*

8. **Comment** Account for nitrogen and phosphorus in raw water supplies; account for non-bioavailable nitrogen without amending regulation; extend applicablility of these provisions beyond industries to include POTWs also. (Loudoun Co. S.A., Virginia Association of Municipal Wastewater Agencies)
Response: *The provision to allow consideration of nutrient loading within a plant's intake water is limited to industrial dischargers that demonstrate to the satisfaction of the Board that a significant portion of the nutrient load originates in its intake water. This is not the case with publicly owned treatment facilities which primarily treat sewage from residences and businesses. Municipal water supplies also receive extremely stringent purification and disinfection treatment prior to distribution, so the characteristics of the raw water are very different from the drinking water. Regarding non-bioavailable nitrogen, the Water Quality Management Planning Rregulation will not have to be amended since any limitation approved for the non-bioavailable nitrogen will be a portion of the assigned waste load allocation.*

REGULATORY FLEXIBILITY ANALYSIS

Please describe the agency's analysis of alternative regulatory methods, consistent with health, safety, environmental, and economic welfare, that will accomplish the objectives of applicable law while minimizing the adverse impact on small business. Alternative regulatory methods include, at a minimum: 1) the establishment of less stringent compliance or reporting requirements; 2) the establishment of less stringent schedules or deadlines for compliance or reporting requirements; 3) the consolidation or simplification of compliance or reporting requirements; 4) the establishment of performance standards for small businesses to replace design or operational standards required in the proposed regulation; and 5) the exemption of small businesses from all or any part of the requirements contained in the proposed regulation.

The regulations for control of nutrient discharges from point sources in the Chesapeake Bay watershed are part of the Commonwealth's comprehensive initiative to restore water quality in Virginia's Bay waters. They will assist in achieving compliance with new tidal water quality standards that protect designated uses in the Bay and the tidal portions of its tributary rivers. Virginia has used a watershed-based approach in this restoration effort, combining nutrient and sediment reductions from both point sources and nonpoint sources. The point source component of the watershed-based approach assigns total nitrogen and total phosphorus waste load allocations for significant nutrient dischargers, based on full design flow coupled with stringent nutrient reduction treatment. Alternative regulatory methods incorporated into this approach include:

1) *The establishment of less stringent compliance or reporting requirements: an allowance is made in Section 9 VAC 25-40-70.B.4, whereby the Board may establish a technology-based standard and associated concentration limitation less stringent than the applicable standard specified in preceding sections. This would be based on a demonstration by an owner or operator that the specified standard is not technically or economically feasible for the affected facility or that the technology-based standard and associated concentration limitation would require the owner or operator to construct treatment facilities not otherwise necessary to comply with his waste load allocation without reliance on nutrient credit exchanges pursuant to the 2005 Nutrient Credit Exchange Program law, provided, however, the discharger must achieve an annual total nitrogen waste load allocation and an annual total phosphorus waste load allocation as required by the Water Quality Management Planning Regulation (9 VAC 25-720).*

   In addition, Section 9 VAC 25-40-70.C. specifies that the Board may approve an alternate compliance method to the technology-based effluent concentration limitations, by incorporating a provision into the VPDES permit of an Exemplary Environmental Enterprise (E3) facility or an Extraordinary Environmental Enterprise (E4) facility that allows suspension of applicable technology-based effluent concentration limitations during the period the E3 or E4 facility has a fully implemented environmental management system. The discharger would be required to operate the installed nutrient removal technologies at the treatment efficiency levels for which they were designed.

2) *The establishment of less stringent schedules or deadlines for compliance or reporting requirements: The original proposals public-noticed for comment in February 2005 required significant dischargers to achieve compliance with the regulations within four years following reissuance or major modification of the VPDES permit, but in no case later than December 31, 2010. Non-significant dischargers were to have the discharge requirements placed in their reissued or modified VPDES permit after December 31, 2010, with compliance achieved within four years following that reissuance or major modification.*

   The proposal adopted by the Board in June 2005 did not include these schedules for compliance. Instead, a compliance schedule will be developed by the Board under another rulemaking, which involves a regulation for a Watershed General Permit that will cover all the significant dischargers in the Bay drainage area. This regulation was authorized by the 2005 Nutrient Credit Exchange law, and is anticipated to be released for public comment in early 2006.

3) *The consolidation or simplification of compliance or reporting requirements: With the concurrence of the U.S. Environmental Protection Agency, the regulations for control of nutrient discharges from point sources in the Chesapeake Bay watershed are based on annual average concentration requirements (as opposed to weekly or monthly averages) and an annual reporting requirement for the discharged waste loads of total nitrogen and total phosphorus.*

4) *The establishment of performance standards for small businesses to replace design or operational standards required in the proposed regulation: In appropriate cases, industrial dischargers have been assigned waste load allocations that reflect "design flow" allowances for full production potential, proportional level-of-effort reduction compared to municipal plants, and unique wastewater qualities affecting 'treatability'. Allowances may also be made, upon acceptable demonstration to the Board, that a significant portion of an industry's discharged nutrient load is not 'bioavailable' to aquatic life, or that 'net' load limits should apply in order to address nutrients in intake water.*

5) *The exemption of small businesses from all or any part of the requirements contained in the proposed regulation: The regulations apply to significant dischargers of nutrients. There area thresholds of 'equivalent loads' that may exclude or exempt small businesses from the requirements, depending on the magnitude of their annual discharged total nitrogen and total phosphorus loads, as follows: "Equivalent load" means 2,300 pounds per year of total nitrogen and 300 pounds per year of total phosphorus at a flow volume of 40,000 gallons per day; 5,700 pounds per year of total nitrogen and 760 pounds per year of total phosphorus at a flow volume of 100,000 gallons per day; and 28,500 pounds per year of total nitrogen and 3,800 pounds per year of total phosphorus at a flow volume of 500,000 gallons per day."*

ATTACHMENT:

- Proposed revisions to Regulations 9 VAC 25-40 and 9 VAC 25-720

COMMONWEALTH of VIRGINIA

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MEMORANDUM

TO: State Water Control Board Members
FROM: Ellen Gilinsky, Ph.D., Director, Water Quality Programs
DATE: November 4, 2005
SUBJECT: Point Source Nutrient Control Regulations for Dischargers in the Chesapeake Bay Watershed

EXECUTIVE SUMMARY

Staff intends to ask the Board to adopt amendments to two sections of the Water Quality Management Planning Regulation ("WQMP", 9 VAC 25-720) that were deferred at the September 21, 2005 meeting:

(1) 9 VAC 25-720-60. James River Basin, C. Nitrogen and Phosphorus Waste Load Allocations to Restore the Chesapeake Bay and its Tidal Tributaries, and
(2) 9 VAC 25-720-120. York River Basin, C. Nitrogen and Phosphorus Waste Load Allocations to Restore the Chesapeake Bay and its Tidal Tributaries.

The proposed amendments, to the York and James Basins' total nitrogen and total phosphorus waste load allocations, will complete the rulemaking process for point source nutrient control regulations for significant dischargers in the Chesapeake Bay watershed.

BACKGROUND

These actions follow the Board's decision at their June 28, 2005 meeting to adopt the amended WQMP Regulation and suspend the effective date to allow for another 30-day public comment period. The Board then took final action at the September 21, 2005 meeting to adopt the proposed amendments to other sections of the WQMP Regulation, including nutrient waste load allocations for significant dischargers in the Shenandoah-Potomac, Rappahannock, and Eastern Shore Basins. Requests received during the re-opened comment period for increased waste load allocations from dischargers in the York and James basins were deferred at that time, to be addressed when final recommendations for the special water quality standards proposed for those waters (site-specific dissolved oxygen in the Pamunkey and Mattaponi; numeric chlorophyll criteria in the James) were presented to the Board for consideration at the November 21, 2005 meeting.

The other key reason for deferring staff recommendations on the James and York nutrient waste load allocations in September was to allow time for the EPA-Chesapeake Bay Program Office to run additional water quality modeling scenarios that had been negotiated with the Virginia Association of Municipal Wastewater Agencies ("VAMWA"). These scenario runs simulated varying nutrient reduction levels at the wastewater treatment plants in the York and James basins, with an assessment of the resulting water quality conditions in terms of compliance with dissolved oxygen standards in the York, and proposed numeric chlorophyll criteria in the James. These model results were released for public review on October 18, 2005, with comments accepted until November 1, 2005. Briefings were also held for key stakeholder groups including citizen conservation organizations, VAMWA, Virginia Manufacturing Association, as well as EPA Bay Program and Region 3 staff.

During the re-opened review period (July-August) for the WQMP Regulation, comments were received from several dischargers in the York and James basins requesting increased nutrient waste load allocations. These are addressed in the "Public Comment Issues" section which follows later in this memorandum.

During the review period (October-November) for the additional James and York Water Quality Modeling Results, 12 respondents submitted comments, including public wastewater treatment facility owners, citizen conservation groups, an individual citizen, a Virginia State agency, and a federal agency. Comments needing an agency response are also addressed in the "Public Comment Issues" section below.

SUBSTANCE OF AMENDMENTS AND REVISIONS

Water Quality Management Plan Regulation; 9 VAC 25-720: The revisions made to the June 28, 2005 amended regulation are as follows:

1. Section 720-60. James River Basin, C. Nitrogen and Phosphorus Waste Load Allocations to Restore the Chesapeake Bay and its Tidal Tributaries: final discharged waste load allocations for total nitrogen and total phosphorus are assigned to the significant dischargers listed.
2. Section 720-120. York River Basin, C. Nitrogen and Phosphorus Waste Load Allocations to Restore the Chesapeake Bay and its Tidal Tributaries: final discharged waste load allocations for total nitrogen and total phosphorus are assigned to the significant dischargers listed.

PUBLIC COMMENT ISSUES

A. Water Quality Management Planning Regulation (9 VAC 25-720-60-C., James River Basin, and 9 VAC 25-720-120-C., York River Basin)

1. **Comment:** Five dischargers in the York basin and ten dischargers in the James basin requested increased nutrient load allocations, the major reasons being a claim that they will have expanded treatment facilities in operation by 2010, or less stringent treatment levels can be required and still achieve the State's water quality restoration goals.
Response: *Establishing nutrient load allocations has been based, in part, on the design capacity of the wastewater treatment facility that is certified for operation by 2010. Several owners*

requested additional nutrient load allocations due to claims their facilities will be expanded by that date. After staff review of the information submitted by these owners, some were judged to have provided reasonable assurance that their treatment facility would be certified to operate at the expanded flow by 2010. In these cases, the higher allocation was included in the regulation, usually with a footnote in the river basin table that stated the allocation would revert to the amount based on their existing design flow if the expanded facilities were not on-line by 2010.

For dischargers that did not receive a requested higher allocation, staff believes some assurance has been provided that an increase in allocation will be considered in the future should their facility be expanded and operational by 2010. At the September 21, 2005 meeting, the Board adopted a new section, 9 VAC 25-720-40.D., which recognizes that the Board may amend the regulation in the future to adjust individual nutrient load allocations for a number of reasons, including completion of a plant expansion as evidenced by issuance of a Certificate to Operate by December 31, 2010. The section also states that any adjustments to allocations must ensure water quality standards are maintained.

Based on staff review of requested waste load allocation (WLA) increases, figures in the Water Quality Management Planning Regulation either remain unchanged or have been revised as follows for facilities in the York and James Basins:

York

- *Caroline County Regional STP - WLAs currently based on 0.5 MGD design flow; request increase based on 3.0 MGD. Caroline County claims the expanded plant will be in service by 2010, but no major milestones timeline (e.g., permit modification, preliminary engineering report [PER], plans and specifications, bidding, construction) was provided. Evidently a consultant has just begun work on a re-rating study, optimization of existing plant, and PER development. Design flow basis for WLAs remains unchanged, as project is still in very early planning stages with no reasonable assurance the expanded plant will be certified for operation by December 2010.*
- *Hanover Co.-Totopotomoy STP – WLAs currently based 5.0 MGD design; request increase based on 10.0 MGD. The plant's discharge permit has a 10.0 MGD flow tier, and the County provided details on investments in current plant (over 35%) for units capable of treating 10.0 MGD, a Capital Improvement Program schedule beginning in July 2008 for the remaining work to bring the full plant capacity to 10.0 MGD, and Comprehensive Plan estimates of average daily flows reaching 10.0 MGD by 2010. WLAs have been revised based on 10.0 MGD, but Certificate to Operate (CTO) for expansion must be secured by December 2010, or WLAs will decrease based on a design flow of 5.0 MGD. Hanover County also requested consideration for less stringent treatment requirements (8.0 mg/l TN rather than 4.0 mg/l; 1.0 mg/l TP rather than 0.3 mg/l) as the basis for their WLAs, and this comment is addressed in a section following on the James and York Water Quality Modeling Results.*
- *Rapidan S.A.-Gordonsville STP: Rapidan S.A. requested consideration for less stringent treatment requirements (8.0 mg/l TN rather than 4.0 mg/l; 1.0 mg/l TP rather than 0.3 mg/l) in the basis for their WLAs, and this comment is addressed in a section following on the James and York Water Quality Modeling Results.*

- *Smurfit-Stone: 23.0 MGD design flow figure used as basis for WLAs approved by the Board on June 28, 2005. In the first public comment period on regulation amendments, owner provided process and instrumentation diagrams to support claim for 26.0 MGD design capacity, and has restated this claim in re-opened comment period. Owner-furnished figures used for treatment works (in gallons per minute) were the maximum ratings for unit processes, which is an unlikely operating status to be sustained under normal production conditions ("normal" operation capacity of units totaled 18.4 MGD). Therefore, the design flow basis for WLAs remains 23.0 MGD, based on the preceding and several other factors:*
  - *The facility's groundwater permit limits total withdrawal to 8.4 billion gallons/year (approximately 23.0 million gallons/day).*
  - *Other discharge permit parameters (e.g., BOD5 limitations) are water quality based and more stringent than the applicable Federal Effluent Guidelines (that are production based). Thus, an increase in design flow would require a corresponding decrease in effluent concentrations to maintain regulatory loading caps for other pollutants, a capability the owner has not demonstrated in the materials provided.*
  - *Facility is permitted as an industrial wastewater treatment plant; permit limitations and other technology-based WLAs are based on actual production rates and their associated flows. The existing bleach plant has a demonstrated capability to support 805 machine dried tons per day bleached Kraft pulp production (market plus paperboard). The permit was written to allow for this potential increase in production, and the facility has demonstrated that production rate without having an effluent discharge which exceeded the 22.21 MGD reported 30-day maximum flow.*
  - *Use of 23.0 MGD as full production-based design flow is a significant percentage (about 89%) of the claimed maximum design flow (26.0 MGD), which is consistent with the approach used for other industrial dischargers.*

  Owner also requested consideration in the basis for their total phosphorus WLA for a less stringent treatment requirement (1.5 mg/l rather than 1.0 mg/l) to be consistent with the feasible treatment level at pulp/paper mills selected as equivalent to enhanced nutrient reduction at POTWs. This comment is addressed in a section following on the James and York Water Quality Modeling Results.

James

- *Buena Vista STP – WLAs currently based 2.25 MGD; City requested increase based on 3.0 MGD. While permit reissued on 11/01/04 included a future design flow tier of 3.0 MGD, this does not determine the basis for WLA calculations, which is based on the design flow certified for operation by December 31, 2010. No major milestones timeline (e.g., permit modification, preliminary engineering report [PER], plans and specifications, bidding, construction) was provided. Design flow basis for WLAs remains unchanged, as no reasonable assurance has been documented that the expanded plant will be certified for operation by December 2010.*
- *Georgia Pacific – WLAs currently based on 8.0 MGD design flow; requested increase based on 10.87 MGD. Owner provided design basis for the wastewater treatment system, which was established based on the proper functioning of the activated sludge treatment system. The limiting design flow is 10.87 MGD, and is based on the 90% point of the peak overflow rate for the secondary clarifier. Since owner has not claimed capacity based on maximum ratings for unit processes, WLAs have been revised based on 10.87 MGD.*

- *South Central Wastewater Authority-Petersburg STP - WLAs currently based on 23.0 MGD; request increase based on 27.0 MGD. No major milestones timeline (e.g., permit modification, preliminary engineering report [PER], plans and specifications, bidding, construction) was provided. Design flow basis for WLAs remains unchanged, as no reasonable assurance has been documented that the expanded plant will be certified for operation by December 2010.*
- *J.H. Miles, Inc. – WLAs currently set at TN = 158,826 lbs/yr; TP = 18,654 lbs/yr. Owner provided updated information on the evaluation of process changes and other cost-effective measures to reduce nutrient loads. A combination of holding discharge flow at current 0.35 MGD average (rather than using full design flow of 0.55 MGD), limiting production days (5 days/week average), substituting cleaning chemicals with less phosphate content, and reduction of marinate sent to waste treatment is projected to reduce the plant's annual TN and TP loads by 18 and 42 percent, respectively, over annual loads that could be discharged at full design flow and 7 days/week operation. Revised WLAs are TN = 153,500 lbs/yr; TP = 21,500 lbs/yr.*
- *Several facility owners (Chesterfield County, Town of Crewe, Hampton Roads Sanitation District, Hopewell Regional Wastewater Treatment Facility, City of Lexington, Lynchburg STP, Maury Service Authority, Rivanna Water and Sewer Authority) requested consideration for less stringent treatment requirements in the basis for WLAs at their plants, and this comment is addressed in a section following on the James and York Water Quality Modeling Results.*

2. **Comment:** Reserve waste load allocations for two York Basin non-significant dischargers that have, or are planned to go off-line based on current permitted capacity and total nitrogen and total phosphorus concentrations reflecting secondary treatment levels (no additional nutrient removal treatment); provide explicit allocations for non-significant plants in regulation. (Spotsylvania Co. Utilities)
Response: *The WQMP regulation only deals with allocations for Significant Dischargers. Non-Significant Dischargers are dealt with through the rulemaking now underway for the Watershed General Permit (WGP; authorized by the 2005 Nutrient Credit Exchange Program statute). The agency will consider means through the WGP process to not discourage regionalization, but also to recognize the need to maintain loading caps.*

B. James and York River Water Quality Modeling Results – *comments pertaining to point source nutrient waste load allocations are covered in the following section. Comments on appropriate water quality standards will be addressed in the agenda item for York and James Special Standards.*

Comment: during the re-opened public review period (July-August) for the WQMP Regulation, several dischargers in the York and James basins requested increased nutrient waste load allocations that would result from less stringent treatment requirements (higher effluent nitrogen or phosphorus concentrations), rather than increased design flow figures, generally as follows: Do not adopt James and York waste load allocations until after approval of final water quality standards for these basins; consider less stringent requirements that can achieve same environmental objectives; review additional modeling results simulating less stringent treatment and resulting water quality standards compliance before finalizing nutrient allocations.

(Chesterfield County, Town of Crewe, Hampton Roads Sanitation District, Hopewell Regional Wastewater Treatment Facility, City of Lexington, Lynchburg STP, Maury Service Authority, Rivanna Water and Sewer Authority, VAMWA)

Response: *The response to these comments was deferred at the Board's September 21, 2005 meeting. A key reason for deferring staff recommendations on the James and York nutrient waste load allocations was to allow time for the EPA-Chesapeake Bay Program Office to run additional water quality modeling scenarios that had been negotiated with the Virginia Association of Municipal Wastewater Agencies. These scenario runs simulated varying nutrient reduction levels at the wastewater treatment plants in the York and James basins, with an assessment of the resulting water quality conditions in terms of compliance with dissolved oxygen standards in the York, and proposed numeric chlorophyll criteria in the James.*

Two model scenarios were run, identified as "VATSJY1" and "VATSJY2" (VATS = Virginia Tributary Strategy; JY = James and York). Table 1 shows the nutrient removal levels for publicly owned treatment works (POTW) that were simulated, as follows:

Table 1. Annual average POTW point source total nitrogen (TN) and total phosphorus (TP) concentrations by basin and scenario.

Basin: Region	Scenario VATS JY1 TN	Scenario VATS JY1 TP	Scenario VATS JY2 TN	Scenario VATS JY2 TP
James River:				
Above Fall Line	6.0 mg/L	0.5 mg/L	6.0 mg/L	0.5 mg/L
Tidal Fresh	5.0 mg/L	0.5 mg/L	5.0 mg/L	0.5 mg/L
Lower Estuary	5.5 MPY	1.0 mg/L	6.9 MPY	1.0 mg/L
York River	6.0 mg/L	1.0 mg/L	8.0 mg/L	1.0 mg/L
Other basins	VATS or TS		VATS or TS	

Notes: NPS and sediments at VATS for James and York Rivers. James Lower Estuary nitrogen shown in million pounds per year (MPY).

After receiving the model results, DEQ staff drafted a set of management options that were shared and negotiated with POTW owners, industrial discharger representatives, citizen conservation organizations, and EPA. These management options also considered treatment levels that differed from those in the two scenarios above, with justification that included the expected water quality response, the reliability and cost-effectiveness of point source controls, consistency with policy decisions previously made in other Bay basins regarding use of stringent treatment, and achievement and maintenance of load caps committed to by the Chesapeake 2000 Agreement signatories.

In response to the October-November review period on the additional James and York water quality modeling runs, several commenters either endorsed a particular combination of treatment levels, or stated that the water quality conditions resulting from simulation of less stringent treatment requirements supported their requests for increased nutrient waste load allocations, as follows:

York Basin

- *Chesapeake Bay Foundation – "...fully supports the recommendations in the Management Options... (POTWs at 6 mg/L TN and 0.7 mg/L TP; 2 paper mills at 1.0 mg/L TP)..."*
- *EPA Region 3 – "EPA supports the York River basin point source allocations as outlined in the Management Options ... allocations are supportive of Virginia's adopted and proposed water quality standards ...allocations also ensure the entire burden of the required nutrient reductions does not fall on nonpoint sources..."*
- *Hampton Roads Sanitation District – "...recommends that the POTW point source allocations be established at the conditions evaluated in VATS JY2 (TN=8 mg/l, TP=1.0 mg/l at design flows)."*
- *Hanover County Utilities – "...nutrient allocations based on 6 to 8 mg/l and 1 mg/l of total nitrogen and total phosphorous respectively are appropriate based on the model results."*
- *Virginia Association of Municipal Wastewater Agencies – "...allocations for York River dischargers should be based on at least 8 mg/l total nitrogen and 1 mg/l total phosphorus because all of the desired water quality benefits are attained at these levels."*

***The agency response to these comments**, as well as the other York discharger requests for less stringent treatment requirements submitted during the July-August re-opened review period, has been addressed through the management options described above. Following is the recommended option, with justification for the treatment levels selected.*

*1. **York Basin Nitrogen Waste Load Allocations:** Base POTW allocations on TN = 6.0 mg/l; retain industrial treatment levels, equivalent to enhanced nitrogen reduction at POTWs, as approved in June 2005. Justification for this selected option:*

- *Significant nutrient reduction needed to address existing poor water quality as evidenced by non-attainment of dissolved oxygen criteria in the lower river - ranging from 21% to 34% (from initial 2006 assessment results).*
- *Consistent with approach of using stringent technology to protect water quality.*
- *Total York point source discharged nitrogen load in 2000 was ~1.2 million pounds per year (MPY). An allocation based on TN = 8 mg/l only keeps point source loading at that level. A POTW allocation based on TN = 6 mg/l will reduce the load to 1.0 MPY.*
- *Increases likelihood of achieving water quality standards since nutrient reduction by point sources is more reliable than implementing nonpoint source controls.*

*2. **York Basin Phosphorus Waste Load Allocations:** Base POTW allocations on TP = 0.7 mg/l and two paper mill allocations (Bear Island Paper [co-discharge with Doswell STP] and Smurfit Stone) on 1.0 mg/l; retain other industrial treatment levels, equivalent to enhanced phosphorus reduction at POTWs, as approved in June 2005. Justification for this selected option:*

- *The estimated total York point source phosphorus load delivered to tidal waters in 2000 was ~0.164 MPY. An allocation based on TP = 1.0 mg/l for the POTWs and 1.5 mg/l for the two paper mills would be ~0.233 MPY delivered, a 42% increase over 2000 loads.*
- *An allocation based on POTWs at 0.7 mg/l and the paper mills at 1.0 mg/l is ~0.166 MPY delivered, which essentially holds-the-line. This would be acceptable since it*

appears phosphorus does not significantly influence water quality in the lower portion of the river.

- *When this allocation is added to the total phosphorus loads in the other Virginia river basins, the total phosphorus tributary strategy loads are within 1% of the 6.0 MPY Virginia allocation.*
- *At a minimum, allocations should be set so the basin-wide point source loads do not increase from year 2000 levels.*

James Basin

- *Chesapeake Bay Foundation – "...fully supports the recommendations (as proposed in the DEQ staff correspondence referenced above)" [i.e., management options], "for... TN and TP allocations for POTWs above the fall line, TP allocations for POTWs in the Lower Estuary and phased reductions for TN allocations at POTWs in the Lower Estuary."*
- *EPA Region 3 – "EPA supports the James River basin point source allocations for the above fall line, tidal fresh segment and ...total nitrogen allocations for the lower estuary facilities as outlined in the Management Options .... The allocations are supportive of Virginia's proposed chlorophyll a water quality criteria for the tidal James River and its tidal tributaries."*
- *Hampton Roads Sanitation District – "VATSJY2 loads are representative of anti-degradation levels."... "There is no need to establish an allocation for the lower James River on the basis of BNR (i.e. 8 mg/l) as a minimum treatment level."... "There is no present need to "phase in" a more stringent allocation than 6.9 MPY."... "The attainment of existing interim State-wide nutrient allocation values is irrelevant."*
- *Hopewell Regional Wastewater Treatment Facility - supports the results of the water quality modeling for the tidal fresh James River, which confirms the previously approved total nitrogen WLA for HRWTF. Requests total phosphorus WLA increase based on 0.8 mg/l, rather than 0.5 mg/l, due to industrial nature of their wastewater and high cost to an already fiscally stressed municipality.*
  ***Response:** Hopewell's phosphorus WLA approved in June 2005 was based on an annual average concentration of 0.3 mg/l and full design flow of 50.0 MGD. In a section which follows, it is now recommended that dischargers in the James tidal fresh region have their phosphorus WLAs based on a less stringent concentration of 0.5 mg/l, which provides some relief to Hopewell. In addition, more cost-effective alternatives to on-site treatment could become available through the nutrient credit exchange program now being developed.*
- *James River Association- "...urges the Board to exercise extreme caution in approving any increase to the waste load allocations based on the latest two model runs beyond the current approved allocations for the following reasons:"... "...prudent and preferable to provide some margin of safety in the pollution allocations...", (point source controls are) "most effective approach to achieve water quality standards... ", and "consistency with pollution allocations for other Virginia waters."*
- *Lynchburg Utilities – Review of model results demonstrate that WLAs approved at SWCB's 6/28/05 meeting were overly stringent and prove that higher point source WLAs will still achieve water quality standards. As a minimum, Lynchburg's total nitrogen and phosphorus WLAs approved in June are justified.*

- *Philip Morris USA – PMUSA's nitrogen WLA approved in June 2005 was based on the portion of the discharge deemed to be bioavailable to aquatic life. Concerns have been raised by EPA Region 3 staff regarding the study design used by PMUSA and their consultants, and the validity of the conclusion that a significant portion of the TN discharged (dissolved organic-nitrogen, which makes up nearly 88% of the TN) is not bioavailable. Discussions have been held among PMUSA and their consultants, EPA, and DEQ staff to identify the additional information needed to further justify the claim about bioavailability, and PMUSA will follow up in an attempt to address the concerns raised, so that the provision in Section 9VAC25-720-40 B. can be utilized to reduce the regulated portion of their discharge to the amount approved in June (18,547 lbs/yr). For now, the TN allocation has been revised to 139,724 lbs/yr, which includes the dissolved organic-nitrogen. It should be noted that even this WLA represents a significant reduction in the discharged TN load since PMUSA began modifying their wastewater process in 2001 to achieve near limit-of-treatment removal of ammonia and oxidized nitrogen, two forms that are bioavailable. From 1999 to 2000, PMUSA's average TN load was approximately 203,000 lbs/yr.*
- *Richmond Utilities - Review of model results demonstrate that WLAs approved at SWCB's 6/28/05 meeting were overly stringent and prove that higher point source WLAs will still achieve water quality standards. As a minimum, Richmond's total nitrogen and phosphorus WLAs approved in June are justified. "The management options...cut point source allocations more than the modeling results warrant. It is strongly recommended that if the DEQ believes in a market driven approach to achieve potential early reductions and continuous decrease in nutrients in the James River watershed, interpretation of modeling results should meet with the goal of incremental changes and equity between PS and NPS."*
- *South Central Wastewater Authority – encouraged by modeling results which indicate SCWA's total nitrogen and total phosphorus WLAs, based on management options (5 mg/l TN and 0.5 mg/l TP), at current and requested future design capacities of 23 MGD and 27 MGD, respectively, would meet the water quality standards.*
- *Virginia Association of Municipal Wastewater Agencies – concur with WLAs resulting from treatment levels simulated in recent model runs for above-fall-line (6.0 mg/l TN; 0.5 mg/l TP) and tidal fresh dischargers (5.0 mg/l TN; 0.5 mg/l TP). Set lower estuary total nitrogen WLA at 6.9 million pounds per year (6.7 MPY for HRSD plants), for the reasons detailed in HRSD's comment letter.*

***The agency response to these comments**, as well as the other James discharger requests for less stringent treatment requirements submitted during the July-August re-opened review period, has been addressed through the management options described above. Following is the recommended option, with justification for the treatment levels selected.*

***1. Waste Load Allocations for James Above-Fall-Line and Tidal Fresh Regions:** Base POTW allocations for above-fall-line region on TN = 6.0 mg/l and TP = 0.5 mg/l, and for the tidal fresh region on TN = 5.0 mg/l and TP = 0.5 mg/l. Justification for this selected option:*

- *Consistent with approach of using stringent technology to protect water quality.*
- *These allocations are predicted to achieve the proposed water quality chlorophyll summer criteria of 23 ug/l in the lower tidal fresh segment, and 22 ug/l in the oligohaline segment.*

2. Waste Load Allocations for James Lower Estuary Region:

*a. **Total Phosphorus** - Base POTW allocations in lower estuary on TP = 1 mg/l.*
Justification for this selected option:
- *Higher salinity region is less responsive to changes in phosphorus levels.*
- *Minimum BNR nutrient removal level is acceptable.*

*b. **Total Nitrogen** – set total point source allocation in lower estuary at 6.15 million pounds per year (MPY), with 6.0 MPY allocated to HRSD facilities in aggregate.*
Justification for this selected option:
- *Represents a significant reduction in TN load (~1.0 MPY) compared to current discharge levels.*
- *Contributes to restoration of SAV by improving water clarity and reducing algal growth on plant leaves.*
- *Model predictions show some benefits for chlorophyll levels at the segment level under long-term hydrology conditions. Local water quality on shorter time scales should also be improved.*
- *Nutrient Credit Exchange Program allows an owner of multiple plants in the same river basin to receive aggregated waste load allocations.*

REGULATORY FLEXIBILITY ANALYSIS

Under recent amendments to the Administrative Process Act, agencies must included an analysis of alternative regulatory methods, consistent with health, safety, environmental, and economic welfare, that will accomplish the objectives of applicable law while minimizing the adverse impact on small business. Alternative regulatory methods include, at a minimum: 1) the establishment of less stringent compliance or reporting requirements; 2) the establishment of less stringent schedules or deadlines for compliance or reporting requirements; 3) the consolidation or simplification of compliance or reporting requirements; 4) the establishment of performance standards for small businesses to replace design or operational standards required in the proposed regulation; and 5) the exemption of small businesses from all or any part of the requirements contained in the proposed regulation.

The regulations for control of nutrient discharges from point sources in the Chesapeake Bay watershed are part of the Commonwealth's comprehensive initiative to restore water quality in Virginia's Bay waters. They will assist in achieving compliance with new tidal water quality standards that protect designated uses in the Bay and the tidal portions of its tributary rivers. Virginia has used a watershed-based approach in this restoration effort, combining nutrient and sediment reductions from both point sources and nonpoint sources. The point source component of the watershed-based approach assigns total nitrogen and total phosphorus waste load allocations for significant nutrient dischargers, based on full design flow coupled with stringent nutrient reduction treatment. Alternative regulatory methods incorporated into this approach include:

1) *The establishment of less stringent compliance or reporting requirements: an allowance is made in Section 9 VAC 25-40-70.B.4, whereby the Board may establish a technology-based*

standard and associated concentration limitation less stringent than the applicable standard specified in preceding sections. This would be based on a demonstration by an owner or operator that the specified standard is not technically or economically feasible for the affected facility or that the technology-based standard and associated concentration limitation would require the owner or operator to construct treatment facilities not otherwise necessary to comply with his waste load allocation without reliance on nutrient credit exchanges pursuant to the 2005 Nutrient Credit Exchange Program law, provided, however, the discharger must achieve an annual total nitrogen waste load allocation and an annual total phosphorus waste load allocation as required by the Water Quality Management Planning Regulation (9 VAC 25-720).

In addition, Section 9 VAC 25-40-70.C. specifies that the Board may approve an alternate compliance method to the technology-based effluent concentration limitations, by incorporating a provision into the VPDES permit of an Exemplary Environmental Enterprise (E3) facility or an Extraordinary Environmental Enterprise (E4) facility that allows suspension of applicable technology-based effluent concentration limitations during the period the E3 or E4 facility has a fully implemented environmental management system. The discharger would be required to operate the installed nutrient removal technologies at the treatment efficiency levels for which they were designed.

2) *The establishment of less stringent schedules or deadlines for compliance or reporting requirements: The original proposals public-noticed for comment in February 2005 required significant dischargers to achieve compliance with the regulations within four years following reissuance or major modification of the VPDES permit, but in no case later than December 31, 2010. Non-significant dischargers were to have the discharge requirements placed in their reissued or modified VPDES permit after December 31, 2010, with compliance achieved within four years following that reissuance or major modification.*

The proposal adopted by the Board in June 2005 did not include these schedules for compliance. Instead, a compliance schedule will be developed by the Board under another rulemaking, which involves a regulation for a Watershed General Permit that will cover all the significant dischargers in the Bay drainage area. This regulation was authorized by the 2005 Nutrient Credit Exchange law, and is anticipated to be released for public comment in early 2006.

3) *The consolidation or simplification of compliance or reporting requirements: With the concurrence of the U.S. Environmental Protection Agency, the regulations for control of nutrient discharges from point sources in the Chesapeake Bay watershed are based on annual average concentration requirements (as opposed to weekly or monthly averages) and an annual reporting requirement for the discharged waste loads of total nitrogen and total phosphorus.*

4) *The establishment of performance standards for small businesses to replace design or operational standards required in the proposed regulation: In appropriate cases, industrial*

dischargers have been assigned waste load allocations that reflect "design flow" allowances for full production potential, proportional level-of-effort reduction compared to municipal plants, and unique wastewater qualities affecting 'treatability'. Allowances may also be made, upon acceptable demonstration to the Board, that a significant portion of an industry's discharged nutrient load is not 'bioavailable' to aquatic life, or that 'net' load limits should apply in order to address nutrients in intake water.

5) *The exemption of small businesses from all or any part of the requirements contained in the proposed regulation: The regulations apply to significant dischargers of nutrients. There area thresholds of 'equivalent loads' that may exclude or exempt small businesses from the requirements, depending on the magnitude of their annual discharged total nitrogen and total phosphorus loads, as follows: "Equivalent load" means 2,300 pounds per year of total nitrogen and 300 pounds per year of total phosphorus at a flow volume of 40,000 gallons per day; 5,700 pounds per year of total nitrogen and 760 pounds per year of total phosphorus at a flow volume of 100,000 gallons per day; and 28,500 pounds per year of total nitrogen and 3,800 pounds per year of total phosphorus at a flow volume of 500,000 gallons per day."*

ATTACHMENT:

- Proposed revisions to Water Quality Management Planning Regulation (9 VAC 25-720, Sections 60-C. and 120-C.)